

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/018006

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>7</sup> C12N15/11, 15/85, 5/06, A01K67/027, C12P21/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> C12N15/11, 15/85, 5/06, A01K67/027, C12P21/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

SwissProt/PIR/GeneSeq, Genbank/EMBL/DBJ/GeneSeq,  
CAPUS (STN), MEDLINE (STN), BIOSIS (STN), WPIDS (STN), JICST FILE (JOIS)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	J.P. Morgenstern et al., "A Series of mammalian expression vectors and characterisation of their expression of a reporter gene in stably and transiently transfected cells.", Nucleic Acids Res., 1990, Vol.18, No.4, page 1068	1-4, 7-19, 21-25, 28-29
Y	Donis JA et al., "Comparison of expression of a series of mammalian vector promoters in the neuronal cell lines PC12 and HT4.", Biotechniques., 1993, Vol.15, No.5, p.786-7	1-4, 7-29
Y	Jaffe L. et al., "Developmental failure of chimeric embryos expressing high levels of H-2Dd transplantation antigens.", Proc.Natl. Acad.Sci.U.S.A., 1992, Vol.89, No.13, p.5927-31	1-3, 7-18, 21-24, 28-29

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search  
09 March, 2005 (09.03.05)

Date of mailing of the international search report  
22 March, 2005 (22.03.05)

Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KIM T. et al., "Gene transfer into bovine cells and embryos using replication-defective retroviral vectors encapsidated with xenotropic murine leukemia virus envelopes", Animal Biotechnology, 1993, Vol.4, No.1, pages 53 to 69	1-4, 7-17, 21-24, 28
Y	US 2003/0072938 A1 (John C. Kappes, Xiaoyun Wu), 17 April, 2003 (17.04.03), Figures, SEQ:ID:NO:1 & WO 96/032494 A1 & EP 873415 A & JP 2003-519476 A	1, 3, 4, 7-29
Y	Zufferey R. et al., "Woodchuck hepatitis virus posttranscriptional regulatory element enhances expression of transgenes delivered by retroviral vectors.", J.Virol., 1999, Vol.73, No.4, p.2886-92	1, 3, 4, 7-29
Y	JP 7-502510 A (The Regents of the University of California), 16 March, 1995 (16.03.95), Fig. 19B(2) & WO 93/012240 A1 & EP 619742 A & US 5756353 A1	1, 2, 4, 7-29
Y	YANO T. et al., "Ras oncogene enhances the production of a recombinant protein regulated by the cytomegalovirus promoter in BHK-21 cells.", Cytotechnology., 1994, Vol.16, No.3, p.167-78	9-29
A	XU ZL. et al., "Optimization of transcriptional regulatory elements for constructing plasmid vectors. Gene., 2001, Vol.272, No.1-2, p.149-56	1-29
A	NUDEL U. et al., "The nucleotide sequence of the rat cytoplasmic beta-actin gene.", Nucleic Acids Res., 1983, Vol.11, No.6, p.1759-71	1-29
E, A	WO 2005/00888 A2 (ESTES S.D., ZHANG W., GENZYME CORP.), 06 January, 2005 (06.01.05), (Family: none)	1-29

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**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

The matter common to claims 1 to 37 resides in "a  $\beta$ -actin promoter". As the results of the search, however, it is found out that "a  $\beta$ -actin promoter" is not novel because of having been disclosed in document (TK Antonucci, et al., "Eukaryotic promoters drive gene expression in Escherichia coli", J. Biol. Chem. 1989, Vol. 264, p. 17656-17659). Consequently, "a  $\beta$ -actin promoter" falls within the category of prior art and, therefore, this common matter cannot be considered as a special technical feature. Thus, the inventions as set forth in claims 1 to 37 are divided into the inventions as set forth in claims 1 to 29 having a special technical feature in "a DNA construct comprising an enhancer and a mammalian (continued to extra sheet)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
Claims 1 to 29

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

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Continuation of Box No.III of continuation of first sheet(2)

$\beta$ -actin promoter functionally bonded thereto", and the inventions as set forth in claims 30 to 37 having a special technical feature in "a method of elevating the expression amount of a desired DNA characterized by comprising integrating a  $\beta$ -actin promoter originating in the same animal order and species as the host cell into the upstream of the desired DNA". Namely, claims 1 to 37 have two general inventive concepts and there is no novel and special technical feature common to these general inventive concepts. Such being the case, it appears that the present application does not comply with the requirement of unity of invention (Enforcement of the Law Article 13 (PCT Rules 13.1, 13.2 and 13.3)).